

Claims

1. Process for manufacturing a packaging material from a flexible, multi-layer film-type laminate, containing the following steps: production of the film-type laminate from a plurality of films or layers using a laminating and/or extrusion process, printing on the film or the film-type laminate and coating at least one free surface of the film-type laminate with a sealing lacquer,

characterised in that,

the laminating process and/or extrusion process, the printing (12) and the coating with sealing lacquer (14) take place in-line at individual stations in a common production device (10), whereby the printing (12) and the coating with sealing lacquer (14) take place at coating stations (2, 4) using an electrostatic coating process in which coating particles are charged electrostatically and transferred to the film surface to be coated using transfer means by applying an electric field and melted to give a coating film and/or cured.
2. Process according to claim 1, characterised in that the flexible film-type laminate is made up from two or more films, whereby at least two films are laminated onto each other to give a film-type laminate and the lamination takes place at a laminating station (1) in the production device (10) using an electrostatic coating process in which coating particles are electrostatically charged and transferred to the film surface to be coated using transfer means by applying an electric field then melted to give a coating film and/or cured.
3. Process according to one of the claims 1 to 2, characterised in that the free surface of the multi-layer film-type laminate is printed on and the

production device contains a print overlayer coating station and a transparent or translucent print overlayer coating is deposited on the printing lying on the free surface of the film-type laminate, whereby the print overlay lacquer coating is deposited using an electrostatic coating process in which coating particles are charged electrostatically and transferred to the film surface to be coated using transfer means by applying an electric field and then melted to give a coating film and/or cured.

- 10 4. Process according to one of the claims 1 to 3, characterised in that the laminate coating, the printing, the print overlayer and/or the sealing layer are cured in the related coating stations.
- 15 5. Process according to one of the claims 1 to 3, characterised in that the curing of the laminate coating, the printing, the print overlayer and/or the sealing layer takes place in-line in a common curing station (5) situated in the pro-duction device (10) after the coating stations (1, 2, 3, 4).
- 20 6. Process according to one of the claims 1 to 5, characterised in that the laminate coating, the printing, the print overlayer and/or the sealing layer are coating systems that are cured/hardened by radiation, preferably by UV or EB radiation.
- 25 7. Process according to one of the claims 1 to 6, characterised in that the coatings at the laminating station (1), the printing station (2), the print overlayer station (3) and/or the sealing station (4) are formed via an EMB process using a two-component developer system.
- 30 8. Process according to one of the claims 1 to 7, characterised in that the coatings at the laminating station (1), the printing station (2), the print overlayer station (3) and/or the sealing station (4) are formed via an electrophotographic process.

- 5 9. Process according to one of the claims 1 to 8, characterised in that the coating particles at the printing station (2) are dry or liquid toner particles and the toner particles are deposited using electronic data processing means such as image processing means and forming a printed image over part of the film surface.
- 10 10. Process according to one of the claims 1 to 9, characterised in that the coating particles of the print overlayer (13) and/or the sealing layer (14) are in the form of a powdered lacquer.
- 15 11. Process according to one of the claims 1 to 10, characterised in that the sealing coating (14) is a cold-sealing or hot-sealing lacquer.
- 20 12. Process according to one of the claims 1 to 11, characterised in that the sealing layer (14) is deposited locally, using electronic data processing means, on the areas of packaging material surface that is to be sealed.
13. Process according to one of the claims 1 to 12, characterised in that the print overlayer (13) is deposited locally, using electronic data processing means, on the areas of packaging material that are printed on.
- 25 14. Process according to one of the claims 1 to 13, characterised in that the thickness of the laminating layer, the print overlayer and/or the sealing layer is controlled by electronic data processing means.
- 30 15. Production device (10) for manufacturing a multi-layer film-type laminate according to one of the claims 1 to 14, whereby the production device (10) comprises a continuous feed production line for film-type materials with an uncoiling and coiling system for uncoiling and coiling the films or

film-type laminates in question present in roll form,

characterised in that,

5 the production device (10) contains one laminating (1) and/or extrusion
station for manufacturing a multi-layer film-type laminate, at least one
printing station (2) and at least one sealing layer station (4), and the
individual stations are arranged in-line as integral modules of the
production device (10), whereby the printing station (2) and the sealing
10 layer station (4) contain means for coating the film or film-type laminate
using an electrostatic coating process.

16. Device according to claim 15, characterised in that the production device
contains a laminating station (1) and the laminating station (1) has means
15 for coating the film using an electrostatic coating process.

17. Device according to one of the claims 15 to 16, characterised in that the
means for electrostatic coating contains means for electrostatic charging
coating particles and means for transferring the electrostatically charged
20 coating particles to the film surface that is to be coated.

18. Device according to claim 17, characterised in that the means for trans-
ferring the electrostatically charged coating particles contain a transfer
roll or transfer belt on which the electrostatically charged coating particles
25 are deposited by electrostatic forces, and means for applying an electric
field to transfer the electrostatically charged coating particles from the
transfer roll or transfer belt to the film surface to be coated.

19. Device according to one of the claims 15 to 18, characterised in that the
laminating station (1), the printing station (2), the print overlayer station
30 (3) and/or the sealing layer station (4) have means for electronic data
processing appointed to them for the purpose of specific deposition and

control of partial layer deposition and/or controlling the thickness of the layers.

- 5 20. Device according to one of the claims 15 to 19, characterised in that the coating particles at the printing station (2) are of a solid or liquid toner, and the printing station (2) has appointed to it means for image processing and means for specific, localised deposition of the toner in the form of an image for printing.
- 10 21. Device according to one of the claims 15 to 20, characterised in that the print overlayer station (3) and/or the sealing layer station (4) have/has appointed to them/it means for image processing and means for specific, localised deposition of coating particles.
- 15 22. Device according to one of the claims 20 to 21, characterised in that the image processing means contains means for electronic data processing (EDP) such as image and/or text processing programmes for the purpose of producing an image and/or drawing in the form of a printer's copy, whereby the data for the printer's copy are present in digital form and the
20 coating stations (2, 3, 4) contain means for coating the film or film-type laminate using an electrophotographic process.
- 25 23. Device according to one of the claims 15 to 22, characterised in that the laminating station (1), the printing station (2), the print overlayer station (3) and/or the sealing layer station (4) each contain a heating unit for melting the coating.
- 30 24. Device according to one of the claims 15 to 23, characterised in that the laminating station (1), the printing station (2), the print overlayer station (3) and/or the sealing layer station (4) each contain a curing unit for hardening the coating.

25. Device according to one of the claims 15 to 23, characterised in that the production device (10) contains a common curing station (5) situated downstream of the coating stations (1, 2, 3, 4).
- 5 26. Device according to one of the claims 24 to 25, characterised in that the curing station (5) or curing units operate with UV or EB radiation.
- 10 27. Use of a film-type laminate (7) produced according to the process of claim 1, for manufacturing sealable forms of packaging such as flat pouches, flat bottom bags, standing pouches, small bags, cushion-type packs, bags, sacks, supports for goods, boxes, base parts for push-through packs, blister packs, lid materials for containers or supports for goods.